

Claims

1. An electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer, including: a writing input portion; a
5 covering frame provided around the periphery of the electronic whiteboard; and a control circuit; wherein, the writing input portion has multilayer structure and is enclosed in the frame, the said writing input portion includes a surface writing layer, an underlayer, and an input induction layer which is provided
10 between the writing layer and the underlayer and is connected to the control circuit by its output, characterized by: the said induction layer may be the antenna array printed on the insulation membrane and arranged along with the X, Y axes, therein the area enclosed by each lattice unit constitutes one induction cell.

2. The electronic whiteboard with built-in membrane antenna array lattice
15 electromagnetic induction layer according to claim 1, characterized by: the area of said induction layer is same as those of the writing layer and the underlayer, or smaller than those of the writing layer and the underlayer, that is, the induction layer is sandwiched coincidently or partly between the writing layer and the underlayer.

20 3. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 2, characterized by: the said induction layer whose area is smaller than those of the writing layer and the underlayer is positioned at the side or center of the writing scope of the writing input portion.

25 4. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, characterized by: a shield layer is provided after the induction layer in order to enhance the anti-interference ability of the device.

5. The electronic whiteboard with built-in membrane antenna array lattice

electromagnetic induction layer according to claim 1, 2, 3, or 4, characterized by: a buffering layer is provided between the induction layer and the underlayer, or a buffering layer is provided between the induction layer and the shield layer.

5 6. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, characterized by: the said insulation membrane may be film material.

7. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, characterized by: the
10 said induction layer may be the antenna array formed by etching the copper-platinum covering the insulation membrane.

8. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 7, characterized by: the said induction layer may be the antenna array formed by flexible printed circuit
15 (FPC).

9. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, characterized by: said induction layer is an antenna array formed by the silver paste or the mixture material of the silver paste and the carbon paste which is printed on the
20 insulation membrane.

10. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 9, characterized by: the induction layer can be printed on two surfaces of the insulation membrane, or printed on one surface of the insulation membrane, and there are two layers
25 of insulation membrane in which one is overlaid on the other.

11. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, 2, 3, 6, 7, 8, 9, or 10, characterized by: said induction layer consists of two or more layers, and the induction cell on respective induction layers are set to interlace each other.

12. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 11, characterized by: the interval sizes of the said induction cells on respective layers may be same or different.

5 13. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, 2, 3, 6, 7, 8, 9, or 10, characterized by: the said induction layer can be made up by a plurality of pieces of membrane with antenna array formed by etching or printing, wherein the X-Y directional antenna array induction electrical connection means are
10 provided on each piece of membrane, and said each piece of membrane is connected by means of the wire induction electrical connection means.

14. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 13, characterized by: said connecting means is one of the following: pin-type connection means, flexible
15 printed circuit means, PIN-PIN connection means, welding spot (VGA) thermal-melted connection means, ultrasonic welding device, solder-plate welding device, puncture-type connection means.

15. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, characterized by: said
20 control circuit includes circuits for signal amplification, filtering and acquisition, data processing, and is provided with the signal output control circuit and/or memory unit.

16. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 15, characterized by: said
25 signal output unit includes electrical cable with standard computer data interface or wireless data switching means (RF transceiver).

17. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 16, characterized by: said signal output unit is connected to a computer and/or a printer, or an external

data storage device, or connected to a telephone line by auxiliary modem.

18. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, 2, 3, 6, 7, 8, 9, 10, 15, 16 or 17, characterized by: the said control circuit and the induction layer
5 are integrated by direct connection, the components of the control circuit are positioned directly on the output of the antenna array, and the control circuit is positioned in the body.

19. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 18, characterized by: the
10 said control circuit is connected to the output of the antenna array formed by flexible printed circuit (FPC), on which the components of the control circuit are set directly.

20. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, 6, 7, 8, 9, 10, 15, 16
15 or 17, characterized by: the said components of the control circuit are mounted on a printed circuit board which is separated from the induction layer, the output of the antenna array of the induction layer is connected to the corresponding input terminal on the printed circuit board by means of pressure-connection, plug-in connection or welding-connection.

20 21. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 20, characterized by: the said output of the antenna array of the induction layer is positioned between a hard sheet and a printed circuit board; a buffering layer is provided between the hard sheet and the output of the antenna array; the hard sheet, buffering
25 layer and the output of the antenna array are overlaid on the printed circuit board by means of the screwing-conjunction; the output of the antenna array is connected with corresponding input terminal on the printed circuit board.

22. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 21, characterized by: the

said control circuit is integrated with the body, and it can be positioned in the covering frame which is around the periphery of the body.

23. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 20, characterized by: the
5 control circuit is positioned outside the body, and connected to the body through the electrical connection means; the output of the antenna array of the induction layer is connected with the output interface of the induction layer by means of pressure-connection, plug-in connection or welding-connection; on the control circuit, an interface which can match the
10 electrical connection means of the induction layer is provided.

24. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 23, characterized by: the said output of the antenna array of the induction layer is positioned between a hard sheet and a printed circuit board; a buffering layer is provided between
15 the hard sheet and the output of the antenna array; the hard sheet, the buffering layer and the output of the antenna array are overlaid on the printed circuit board by means of the screwing-conjunction; the output of the antenna array is connected with corresponding input terminal on the electrical connection means.

20 25. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 23, characterized by: the output interface of the induction layer and the interface of the control circuit may be one of the following: pin-type connection means, flexible printed circuit means, PIN-PIN connection means, welding spot (VGA) thermal-melted
25 connection means, ultrasonic welding device, solder-plate welding device, puncture-type connection means.

26. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, characterized by: a bracket is provided outside the body frame, and the body is mounted on the

bracket.

27. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, 15, 16, 17 or 26, characterized by: the said control circuit is positioned in the bracket, the
5 interface is set on the bracket, and the output interface of the induction layer is set at a place in the body corresponding to the interface of the control circuit.

28. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, characterized by: the
10 said writing input portion and the covering frame around the said writing input portion is made by flexible and windable material; the body of the electronic whiteboard can be furled and carried conveniently.

29. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 28, characterized by: one
15 side edge of the body are set into a spool and fixed; wring-springs are mounted on the both end of the spool for winding up the body; a fixing buckle is provided on another side edge of the body.

30. The electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer according to claim 1, 15, 16, 17, 28 or 29,
20 characterized by: said control circuit can be provided in the spool.